



Missouri Department of Natural Resources
Blue River - WBID 0418
Water Chemistry and Bacterial Data, 2001-2004

Org	Site	Site Name	Yr	Mo	Dy	Time	H	Flow	C	DO	pH	SC	NH3N	SO4	Cl	FC	Ecoli	Recreational Season		
																		Log FC	Log Ecoli	
USGS	418/1.1	Blue R. @ Stadium Dr.	2003	3	6	930		30	0.6	13.7	7.6	1680								
USGS	418/1.1	Blue R. @ Stadium Dr.	2003	6	2		W	1830					415	0.13		51	30000	8800	10.31	9.08
USGS	418/1.1	Blue R. @ Stadium Dr.	2003	6	11		W	500					635	0.06		72	6400	4800	8.76	8.48
USGS	418/1.1	Blue R. @ Stadium Dr.	2003	6	29		W	481					620	0.16		70	5000	5100	8.52	8.54
USGS	418/1.1	Blue R. @ Stadium Dr.	2003	7	8	930		26	28.4	5.6	7.7	810	0.06				120	79	4.79	4.37
USGS	418/1.1	Blue R. @ Stadium Dr.	2003	7	9		W	550					575	0.0199		71	32000	18000	10.37	9.80
USGS	418/1.1	Blue R. @ Stadium Dr.	2003	8	19	1215		19	29.6	7.6	7.7	905	0.03			102	207	49	5.33	3.89
USGS	418/1.1	Blue R. @ Stadium Dr.	2003	9	11		W	520					1160	0.05		62	62000	22000	11.03	10.00
USGS	418/1.1	Blue R. @ Stadium Dr.	2003	9	13		W	1974					410	0.08		40				
USGS	418/1.1	Blue R. @ Stadium Dr.	2003	12	2	1230		42	4.8	11.4	7.4	805	0.48		110	82	128	74		
USGS	418/1.1	Blue R. @ Stadium Dr.	2004	2	24	1520		150	5.4	11.9	7.8	1210								
USGS	418/1.1	Blue R. @ Stadium Dr.	2004	4	8	1300		86	17.1	13.5	8.3	805	0.0199			89	30	16	3.40	2.77
USGS	418/1.1	Blue R. @ Stadium Dr.	2004	5	25		W	2816					430	0.0199		31	20400	17200	9.92	9.75
USGS	418/1.1	Blue R. @ Stadium Dr.	2004	9	10	1030		83	21.7	7.8	7.6	690	0.03			49	590	505	6.38	6.22

The water quality standard for *E. coli* in Class B whole body contact recreational waters for the protection of human health is 548 col/100 mL. The standard is for the geometric mean of all bacterial counts taken during the recreational season, April 1 through Oct. 31. For *E. coli*, a water is judged to be unimpaired if the 60 percent Upper Confidence Limit (UCL) on the mean is less than the appropriate water quality standard. The formula for the 60 percent UCL is:

$$60\% \text{ UCL} = (\text{sample mean}) + ((0.253)(\text{standard deviation})/(\text{square root of sample size}))$$

The *E. coli* data is normalized by natural log transformation and the UCL calculations are as follows:

$$\text{E. coli } 60\% \text{ UCL} = (7.29) + ((0.253)(2.74)/(3.16)) = 7.51 \quad \text{Antilog of } 7.51 =$$

Geomean	2650.07	1466.14
Log Mean	7.88	7.29
Log Std. Deviation	2.70	2.74
Sample Size	10	10

Since 1825.55 is more than the Class B *E. coli* standard of 548, this water is judged to be **impaired** by bacteria.